

ORIGINAL



August 2, 1999

EX PARTE OR LATE FILED

BY HAND DELIVERY

Ms. Magalie Roman Salas
Secretary
Federal Communications Commission
445 Twelfth Street, S.W.
12th Street Lobby, TW-A325
Washington, D.C. 20554

**Re: Written *Ex Parte* Presentation in CC Docket No. 96-98,/
Implementation of the Local Competition Provisions in the
Telecommunications Act of 1996**

Dear Ms. Salas:

The Telecommunications Industry Association (TIA) submits the enclosed *ex parte* letter (with attachments) for inclusion in the record of the above-captioned proceeding. Pursuant to Section 1.419 of the Commission's Rules, 47 C.F.R. § 1.419, and paragraph 54 of the *Second Further Notice of Proposed Rulemaking*, an original and twelve (12) copies are enclosed.

If you have any questions concerning this filing please contact the undersigned.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "Derek R. Khlopin".

Derek R. Khlopin
Regulatory Counsel

Enclosures

No. of Copies rec'd 016
List ABCDE



Matthew J. Flanigan
President



August 2, 1999

The Honorable William E. Kennard
Federal Communications Commission
445 12th Street, SW
Room 8-B201
Washington, DC 20554

Re: Implementation of the Local Competition Provisions in the
Telecommunications Act of 1996, CC Docket No. 96-98

Dear Chairman Kennard:

On June 15, 1999, in a speech before the National Cable Television Association, you said "[s]ometimes people talk about broadband as though it is a mature industry. But, in fact we don't even have a duopoly in broadband. We don't even have a monopoly in broadband. We have a NO-opoly because, the fact is, most Americans don't even have broadband."¹

You went on to say that, "We have to get these pipes built."²

We agree. But the situation is, in fact, worse than you described. True broadband is being deployed to residences far too slowly as evidenced by the fact that most incumbent local exchange carriers (ILECs) continue to invest billions of dollars in copper solutions to serve residential customers, when high-capacity, broadband-capable fiber solutions can be deployed for no additional cost.

¹ *The Road Not Taken: Building a Broadband Future for America*, Remarks of William E. Kennard, FCC Chairman, before the National Cable Television Association, Chicago, IL (June 15, 1999) (as prepared for delivery).

² *Id.*

The Telecommunications Industry Association (“TIA”) will demonstrate in this letter that:

- ILECs continue to invest in capacity-constrained copper-based solutions for nearly 85% of the newly constructed and totally rehabilitated outside plant serving residential customers;
- high-capacity, fiber-based narrowband and broadband solutions can be deployed in new builds and rehabs serving residential customers at no additional cost compared to copper-based solutions with less transmission capacity; and
- a primary reason that most ILECs invest in copper instead of fiber despite the cost parity between the two media is the prospect of being required to unbundle new loop facilities and sell them to competitors, *i.e.*, at Total Element Long-Run Incremental Cost (TELRIC).

TIA proposes that the Commission take action to correct this regulatory failure in the ongoing Unbundled Network Element (“UNE”) remand proceeding.³ This can be done through a determination that it will refrain from unbundling a very narrow class of broadband local loop facilities in order to remove a major barrier to ILEC investment in such facilities. The narrow class of facilities to which this exemption would apply are identified herein as “new residential broadband loop facilities.”⁴

TIA will show that such a narrow exemption would increase ILEC investment, comply with the Supreme Court’s remand⁵ and the 1996 Act’s objectives,⁶ conform to

³ Implementation of the Local Competition Provisions of the Telecommunications Act of 1996, *Second Notice of Proposed Rulemaking*, CC Docket No. 96-98, FCC 99-70 (released Apr. 16, 1999) (“*Second Notice*”).

⁴ See p. 11 for a full description of this capability.

⁵ *AT&T Corp v. Iowa Utils. Bd.*, 119 S.Ct 721 (1999).

⁶ Telecommunications Act of 1996, Pub. L. No 104-104, Stat. 56, *Codified at* 47 U.S.C. § 151 *et. seq.* (“1996 Act” or “the Act”).

stated FCC policy in other proceedings, and not damage competition. As such, TIA urges that its proposal be adopted by the Commission in the ongoing UNE proceeding.

I. INTRODUCTION.

As you are aware, TIA represents over 1,000 large and small companies that provide communications and information technology products, materials, systems, distribution services and professional services in the United States and around the world. TIA represents manufacturers and suppliers in all segments of the industry, forging consensus on industry standards as well as policy. Accordingly, TIA fully understands the relationship between regulation and deployment of advanced technologies. TIA member companies have in place or are developing a number of technologies that will spur broadband deployment throughout commercial and residential establishments. While this submission deals most specifically with fiber, other alternatives that meet the definition of 10 Base T and VHS-quality video, including broadband wireless and hybrid fiber-coaxial cable, are proving as well to be viable and cost-effective.

TIA is participating in this proceeding for two reasons. First, TIA believes that broadband facilities⁷ are being deployed in the local access portion of the telecommunications network serving residential subscribers at a pace far below that which likely would occur if market forces were allowed to prevail. And second, TIA is convinced that refraining from unbundling a very limited class of these broadband facilities would likely accelerate deployment without damaging the evolution of competition. TIA proposes herein a very limited exception to the unbundling rules. We believe that adopting this exception will ensure that residential end-users gain timely access to true broadband capability.

⁷ True broadband is defined as a capability that will deliver at least "plain old telephone service" (POTS), 10 Base T data (or its equivalent), and VHS-quality video.

II. THE PROBLEM: DESPITE THE FACT THAT FIBER-BASED SOLUTIONS CAN BE DEPLOYED AT COST PARITY WITH COPPER, MOST ILECs CONTINUE TO DEPLOY NARROWBAND COPPER-BASED SOLUTIONS IN NEW BUILDS AND TOTAL REHABS SERVING RESIDENTIAL END-USERS.

A classic regulatory failure is occurring with respect to the deployment of broadband technology in the local access portion of the network serving residential end-users. Most ILECs⁸ continue to deploy copper technology for new builds and total rehabilitations (rehabs) serving residential end-users when more forward-looking technology that is not as capacity-constrained can be deployed at no additional cost.

Reliable forecasts from Kessler Marketing Intelligence, Corning Incorporated, and the Center for Telecommunications Management indicate that, for new builds and total rehabs, most ILECs are deploying copper-based solutions rather than fiber-based solutions. As reflected in Figure 1 and Table 1 on page 5, these forecasts show that slightly more than 15% of the total ILEC new builds and rehabs serving residential users are going to fiber-based solutions today. Conversely, of course, narrowband copper is being deployed in nearly 85% of the new builds and rehabs. This relatively low level of fiber deployment is expected by two of the three forecasters to continue through the foreseeable future (*i.e.*, 2002).

The low level of "fiber for copper" substitution in new builds and rehabs should be very troubling to the Commission as a matter of public policy because it cannot be easily explained away by the cost differential between fiber and copper solutions. At cost parity, one would expect all the ILECs to do what BellSouth is doing -- deploying fiber in

⁸ BellSouth is the exception. As a matter of policy, it deploys fiber systems in most new builds and in many rehabs. In its comments to the *Section 706 NOI* (Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, *Notice of Inquiry*, CC Docket No. 98-146, 13 FCC Rcd 15280 (1998) ("*Section 706 NOI*")), BellSouth states that it is deploying fiber-to-the-home for new residential developments and in some economic replacements. Comments of BellSouth, CC Docket No. 98-146, at 15.

Figure 1
Forecasts of FITL Deployment Compared to ILEC
Residential New Builds and Total Rehabs

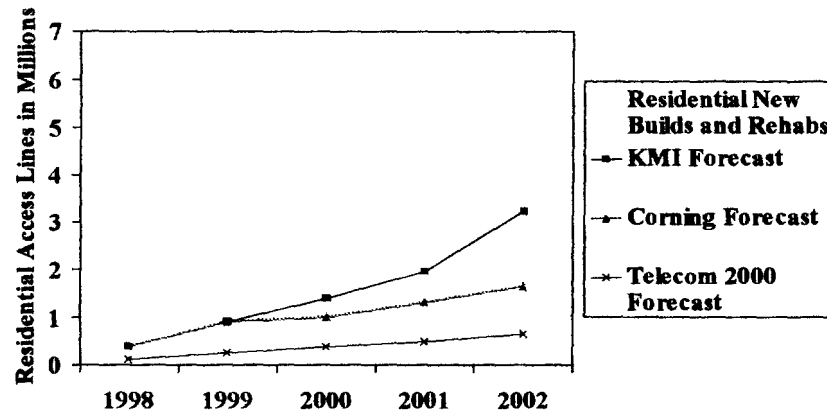


Table 1
Forecasts of FITL Deployment Compared to ILEC New Builds and Total Rehabs

<u>Residential Access Fiber Lines</u>				
<u>Total Residential New Builds And Rehabs¹</u>		<u>KMI Forecast²</u>	<u>Corning Forecast³</u>	<u>Telecom 2000 Forecasts⁴</u>
<u>(in millions of access lines)</u>				
1998	5.45	.4	.4	.1325
1999	5.6	.92	.92	.265
2000	5.77	1.43	1.02	.3975
2001	5.94	1.99	1.33	.53
2002	6.11	3.25	1.68	.6665

¹ Total new builds were calculated by using the average growth rate in new builds over the last five years (2.9%) and applying it annually to the base of 107.3 million access lines as of 1997. Industry sources believe that the rehab rate is somewhere on the order of 1% to 3% per year. Since rebuild data is not publicly available, it is assumed in these calculations that the existing outside plant is rehabilitated at a rate of 2% of the access lines per year.

² These forecasts were derived from the fiber forecasts by Kessler Marketing Intelligence ("KMI") for residential fiber-in-the-loop. KMI's fiber forecasts were converted to access lines by dividing the annual fiber forecast by 0.71 km per subscriber.

³ This forecast was derived from Corning's fiber forecast for deployment in the distribution and drop portions of the network serving residential subscribers. A conversion rate of 0.71 km per subscriber was used to convert the fiber forecast to access lines.

⁴ These forecasts were derived from survey data collected by the Center for Telecommunications Management and published in *The Telecom Outlook Report: 1999-2010*. In this report, the Center interviewed numerous telecommunications executives and came to the consensus view that fiber would achieve no more than 10% penetration by the year 2010. This forecast reflects straight-line growth from zero penetration in 1997 in to 10% in 2010.

most new builds and total rehabs. Four independent and reliable experts have demonstrated in their attached Declarations that fiber-based narrowband and broadband solutions can be deployed at no additional cost over copper in new builds and total rehabs for local access serving residential users.

In his Declaration,⁹ Mr. Cannata from Marconi Communications, demonstrates that POTS can be provided over a fiber-to-the-curb ("FTTC") system at 98% to 103% of the cost of providing POTS over a copper system using a digital loop carrier ("DLC/copper"). He notes further that the FTTC system can be upgraded to provide high-speed data (*i.e.*, 10/100 Base T) by incurring a 16% incremental cost compared to a 40% to 50% incremental cost to upgrade DLC/copper to provide Digital Subscriber Line (xDSL) service. Finally, he demonstrates how a further upgrade to provide VHS-quality broadcast video can be deployed for an incremental cost of 44% over FTTC for POTS, which again compares favorably to the 40% to 50% incremental cost associated with the xDSL solution.

Mr. Jacobs from Corning Incorporated shows in his Declaration¹⁰ similar results with respect to broadband solutions. His analysis shows that an Ethernet fiber-to-the-home system ("EFTTH") using multimode fiber can be deployed at 7% less than ADSL over copper, and EFTTH is substantially more capable. The EFTTH system can deliver POTS, 10/100 Base T data, and VHS-quality broadcast video, which cannot be done on an ADSL system.

Mr. Tuhy from Next Level Communications states in his Declaration¹¹ that "fiber-based narrowband solutions for local access serving residential end-users can be deployed at cost parity with copper-based solutions as measured on an installed first cost

⁹ Declaration of Mark Cannata, Vice President of Marketing, Marconi Communications – Access Network Systems Group, June 15, 1999 (Exhibit 1).

¹⁰ Declaration of Jeffery R. Jacobs, Market Development Engineering Manager for Access Markets, Corning Inc., Telecommunications Products Division, June 13, 1999 (Exhibit 2).

basis for newly constructed or totally rehabilitated outside plant.” He makes a similar statement with respect to broadband. He notes that Next Level Communication’s FTTC system “can be deployed to provide integrated voice, data, and video for the same cost as a copper-based solution with an ADSL overlay for high-speed data.” This assumes new builds or total rehabs as well as a first installed cost comparison.

Finally, Mr. Sheffer from Corning Incorporated addresses the rural deployment issue in his Declaration.¹² He cites a proprietary Bellcore (now Telcordia Technologies) study prepared for Corning showing that the cost of narrowband fiber-to-the-home (“FTTH”) at \$2,370 per home passed beats narrowband DLC/copper at \$2,827 per home passed. In other words, narrowband FTTH is 16.2% less costly than DLC/copper in a rural setting. More surprisingly, broadband FTTH also beats narrowband DLC/copper by 7.5% (i.e., \$2,616 per home passed for broadband versus \$2,827 per home passed for narrowband). Again, this analysis was based on new builds and total rehabs and the cost comparisons were done on an installed first cost basis.

These Declarations provide compelling evidence that fiber-based solutions for narrowband and broadband local access in new build and total rehab situations can be deployed at no additional cost, and in some cases at less cost, than copper-based solutions. In light of this compelling evidence, the fact that ILECs generally are deploying fiber-based systems at a substitution rate of less than 20% is a clear sign that something is wrong when one considers the present and future capabilities of fiber. Since these markets are highly regulated, it is reasonable to expect that regulation is part of the problem. A regulatory failure appears to be occurring.

¹¹ Declaration of Frank Tuhy, Vice President of Technology, Next Level Communications, L.L.C., June 21, 1999 (Exhibit 3).

¹² Declaration of Scott E. Sheffer, Senior Market Development Engineer, Corning Inc., June 18, 1999 (Exhibit 4).

III. THE SOLUTION: REFRAIN FROM UNBUNDLING RESIDENTIAL BROADBAND LOOP FACILITIES DEPLOYED AS NEWLY CONSTRUCTED OR TOTALLY REHABILITATED OUTSIDE PLANT AFTER JULY 1, 1999.

Since regulation is part of the problem, why not make a limited form of deregulation the solution? It stands to reason that the prospect of mandated unbundling has inhibited ILEC investment in residential broadband loop facilities. Little incentive exists for any capitalist to deploy such capability if he or she were required to make access to such facilities available to competitors at a price which does not allow for full cost recovery.

Kathleen Wallman, former Chief of the FCC's Common Carrier Bureau and Deputy White House Counsel, has summed up this investment disincentive quite succinctly. In addressing the question of broadband deployment she stated:

Do we really mean to say that any carrier that is thinking of building a new broadband network should count on being able to recover, from day one of the operation, *only the forward looking cost of their brand new network? I don't think so. No rational, efficient firm would take that deal.* And that would be our collective loss, not just theirs.¹³

Justice Breyer reinforces this observation in noting that "a sharing requirement may diminish the original owner's incentive to keep up or to improve the property by depriving the owner of the fruits of value-creating investment, research, or labor."¹⁴

Even the Commission has noted that overbroad unbundling requirements could discourage investment. In its *Local Competition Order*, the Commission

¹³ Remarks of Kathleen Wallman at the annual convention of the National Association of Regulatory Utility Commissioners, Boston, Mass., Nov. 11, 1997 (emphasis added).

¹⁴ AT&T Corp. v. Iowa Util. Bd., 119 S.Ct. 721, 753 (1999) (Breyer, J. concurring in part and dissenting in part) (*citing* I.H. Demstet, *Ownership, Control, and the Firm: The Organization of Economic Activity*, 207 (1988)).

“acknowledge[d] that prohibiting incumbents from refusing access to proprietary elements could reduce their incentives to offer innovative services.”¹⁵

Of course, the ILECs also have expressed in their comments in this proceeding the negative impact an overbroad unbundling requirement has on investment:

- Ameritech notes that “[t]he engine of the competitive process is the ability of firms, developing efficiencies and innovative new products and services, to differentiate themselves from their competitors. Unbundling requirements deny incumbents that ability.”¹⁶
- US West states that “[f]orced sharing of proprietary elements would be particularly destructive in areas of new and advanced services since that is where innovation and investment are most prevalent and vital today.”¹⁷
- SBC goes even further in its comments, stating that “[t]he combination of an unbundling requirement and TELRIC pricing would completely eviscerate an ILECs incentive to deploy such [new] technologies, by leaving the ILECs with all the risk and none of the reward.”¹⁸
- Bell Atlantic observes that “incumbent carriers will have little incentive to invest in advanced services equipment if it is burdened with an unbundling obligation.”¹⁹

¹⁵ 11 FCC Rcd 15499, 15642, para. 282 (1996).

¹⁶ Comments of Ameritech, CC Docket No. 96-98, at 25-26 (filed May 26, 1999).

¹⁷ Comments of US West, CC Docket No. 96-98, at 24 (filed May 26, 1999).

¹⁸ Comments of SBC Communications Inc., CC Docket No. 96-98, at 76-77 (filed May 26, 1999).

¹⁹ Comments of Bell Atlantic, CC Docket No. 96-98, at 43 (filed May 26, 1999).

While some observers would argue that these ILEC comments are self-serving, their credibility is enhanced by the fact that they are shared by economic experts providing testimony to the Commission on behalf of both the ILECs and AT&T.

Professor Kahn, on behalf of the ILECs, argues that forcing incumbent carriers to make investments in advanced services available to competitors at TELRIC prices destroys the incentive to make the investments in the first place. He says:

In these circumstances, the Commission's prescription of a price purportedly equal to the minimum costs that would be incurred by an efficient supplier, using the most modern technology and writing, as it were, on a clean slate, completes the process of *destroying the incentive to innovate*. The notion that the ILECs are likely to find it profitable to engage in such unprecedentedly risky investments . . . under a regulatory regime that requires them immediately to share those facilities with any and all competitors who ask for them – competitors who are subject to no such obligation – at prices based on the Commission's hypothetical most-efficient-firm cost standard seems flatly in conflict with the long-run prerequisite of innovation.²⁰

Similarly, Professors Ordover and Willig, writing on behalf of AT&T, acknowledge that unbundling requirements will discourage incumbents from investing in last mile broadband facilities. They state:

It would be against the public interest to subject the parties' last mile broadband data transport facilities to any form of regulation at this time. . . . There are many competitors, including the ILECs, that are actively developing broadband transport services. . . . The xDSL services that are currently being deployed by the incumbent LECs alone constitute a significant and attractive commercial alternative to the internet cable services that TCI and others offer. . . . The demand to unbundle broadband transport will engender intrusive regulation of an emerging new service that requires massive entrepreneurial investments and whose marketplace success is far from assured. . . . Forced unbundling with its attendant regulatory uncertainty would likely slow down the

²⁰ Kahn Declaration at 16-17, attachment to Comments of Bell Atlantic and GTE, CC Docket No. 96-98 (filed May 26, 1999).

investment in the development of broadband last mile investment. Investing under the shadow of uncertain regulatory rules in an innovative service exacerbates the already substantial risks associated with that investment.²¹

So if reasonable people can agree that an overbroad unbundling requirement inhibits investment in advanced broadband technology and services, why can't they also agree on a limited exception from the unbundling requirement which would unleash investment in these areas? Such a limited exception would likely provide the solution to the regulatory failure described in Section II above.

This exception could apply to a narrow class of loop facilities that serve only residential customers. TIA proposes that these facilities be identified as "new residential broadband loop facilities." These facilities would be defined by the following characteristics:

- (1) they must be new builds (*i.e.*, consist of the entire outside plant from the central office to the customer's premises) or total rehabs (*i.e.* consist of replacement of the entire outside plant from the central office to the customer's premises) deployed after July 1, 1999;
- (2) they must provide service only to residential subscribers; and
- (3) they must be capable of providing POTS, 10 Base T data (or its equivalent), and VHS-quality video, or must be capable of providing all of these services through the simple upgrade of electronics.

Why this definition? Because it is likely to correct the current regulatory failure without harming competition. As will be demonstrated in Section IV below, competitive local exchange carriers (CLECs) and ILECs are equally capable of deploying this

²¹ Declaration of Professors Janusz A. Ordover and Robert W. Willig, attachment to AT&T's and TCI's Joint Reply to Comments and Joint Opposition to Petitions to Deny

capability. There is no barrier to entry for CLECs. And, from an economic theory standpoint, an unbundling requirement is necessary only where entry barriers would otherwise preclude competition. Only in that circumstance might an unbundling requirement be considered pro-competitive. But, as will be demonstrated below, there are no entry barriers associated with the deployment of new residential broadband loop facilities that will preclude competition.

IV. RATIONALE: THE PROPOSAL SHOULD BE ADOPTED BECAUSE IT WILL INCREASE INVESTMENT, CONFORM TO THE COURT'S REMAND AND TO THE ACT, CONFORM TO FCC POLICY, AND NOT HARM COMPETITION.

1. The Proposal Likely Will Increase Investment in the Local Access Portion of the Network Serving Residential End-Users.

Mr. Chairman, you recently said that “[w]e have a NO-opoly [in broadband] because, the fact is, most Americans don’t even have broadband. . . . We have to get these pipes built.”²² You go on to say, “But how do we do it? We let the marketplace do it.”²³

TIA’s proposal to exempt new residential broadband loop facilities from the unbundling rules will create a marketplace condition for the deployment of these facilities. It will eliminate overbroad government regulation that inhibits investment in a very narrow class of broadband-ready facilities.

The adoption of this proposal will likely result in increased investment by ILECs, and even possibly CLECs, in residential broadband loop facilities. While this proposal will not guarantee an increase in such investment, it will at least give ILECs an opportunity to incur the risks and reap the rewards associated with this investment. As has been demonstrated above, they do not have that opportunity today.

or to Impose Conditions, CS Docket No. 98-178 (filed Nov. 13, 1998).

²² *The Road Not Taken: Building a Broadband Future for America*, Remarks of William E. Kennard, FCC Chairman, before the National Cable Television Association, Chicago, IL (June 15, 1999) (as prepared for delivery).

²³ *Id.*

TIA believes that ILECs will seize this opportunity because abundant evidence exists in academic research that shows a correlation between deregulation and increased investment in new, more efficient technology:

- Dr. Linda Chappell of North Carolina State University found in a September 1998 study that LECs invested more rapidly in digital central office equipment in those states where more liberal or favorable regulatory policies prevail. She used normal probability and hazard rate models to estimate statistically the significance of rate of return regulation and accelerated depreciation on the first adoption of digital central office equipment and fiber optics.²⁴
- Dr. Sumit K. Majumdar in a 1997 study found that less intrusive regulation has a positive impact on LEC technical efficiency and scale efficiency. The study evaluates the effect of incentive regulation on the productivity of LECs between 1988 and 1993. It reveals that pure price cap regimes have a strong positive, but lagged effect, on technical efficiency, while the more regulatory intrusive earning-sharing schemes have a detrimental effect on technical efficiency.²⁵
- In a definitive study on the investment pattern of the LECs after divestiture, Greenstein, McMaster, and Spiller identify how different regulatory schemes affect the pattern of LEC investment in modern infrastructure equipment. The study estimates the influence of different regulatory structures on deployment by the LECs of optical fiber, digital switching, and signaling system 7. It is unique in that it isolates the contribution of state regulatory policies from that of other demographic and economic factors in determining the level of infrastructure deployment. The study finds that pure price caps have a significantly more

²⁴ *The Effects of Regulation on the Diffusion of Technological Innovation in the Local Telephone Industry in the United States*, Linda Marett Chappel, Ph.D. Dissertation, North Carolina State University (Sep. 1998).

²⁵ *Incentive Regulation and Productive Efficiency in the U.S. Telecommunications Industry*, Sumit K. Majumdar, JOURNAL OF BUSINESS, Vol. 70, No. 4 (1997).

positive impact on modern infrastructure deployment than standard earnings-sharing schemes or price cap/earnings-sharing arrangements.²⁶

These studies provide ample evidence that the Commission likely will get a positive investment response by the ILECs if TIA's proposal is adopted.

2. The Proposal Is Entirely Consistent with the "Necessary" and "Impair" Standards Cited in the Supreme Court's Remand and in the 1996 Act.

On January 25, 1999, the U.S. Supreme Court vacated Section 51.319 of the Commission's rules, which had set forth a uniform national list of network elements that ILECs must make available on an unbundled basis to any requesting carrier pursuant to Section 251(c)(3) of the Communications Act.²⁷ The Court concluded that the Commission "did not adequately consider the 'necessary and impair' standards [of Section 251(d)(2)] when it gave blanket access to these network elements, and others, in Rule 319."²⁸

This error, in the Court's view, was influenced by the Commission's mistaken belief that Section 251(c)(3) required an ILEC to "turn over as much of its network as was technically feasible."²⁹ As the Court explained, however, Section 251(c)(3) indicates "where unbundled access must occur, not which [network] elements must be unbundled."³⁰ According to the Court, Section 251(d)(2) imposes "clear limits" on the Commission's power to compel the unbundling of an ILEC's network elements.³¹

²⁶ *The Effect of Incentive Regulation on Infrastructure Modernization: Local Exchange Companies' Deployment of Digital Technology*, Shane Greenstein, Susan McMaster, and Pablo T. Spiller.

²⁷ *AT&T Corp. v. Iowa Utils. Bd.*, 119 S.Ct. 721 (1999). Section 319 of the Commission's Rules identified seven network elements: (1) the local loop; (2) the network interface device; (3) switching capability, (4) interoffice transmission facilities; (5) signaling networks and call-related databases; (6) operations support system functions, and (7) operator services and directory assistance. 47 C.F.R. § 51.319 (1997).

²⁸ *AT&T Corp.*, 119 S.Ct. at 734.

²⁹ *Id.* at 736.

³⁰ *Id.* (internal quotation and citation omitted).

³¹ *Id.* at 738.

Under Section 251(d)(2), the Commission must determine whether access to proprietary ILEC network elements is “necessary” and whether the failure to provide access to an ILEC network element would “impair the ability of the telecommunications carrier seeking access to provide the services it seeks to offer.”³² In particular, Section 251(d)(2) “requires the Commission to determine on a rational basis which network elements must be made available, taking into account the objectives of the Act and giving some substance to the ‘necessary’ and ‘impair’ requirements.”³³ In providing substance to the “necessary and impair” standards of Section 251(d)(2), the Commission cannot “blind itself to” or “disregard[]” the “availability of elements outside of the incumbent’s network.”³⁴ As Justice Breyer explained in his concurrence, the “necessary and impair” standards “ . . . require[] a convincing explanation of why facilities should be shared [or unbundled] where a new entrant could compete effectively without the facility, or where practical alternatives to that facility are available.”³⁵

In light of the Court’s decision, the Commission must address the following core questions in deciding whether to refrain from unbundling new residential broadband loop facilities as proposed herein:

- Is the proposal consistent with the Act’s objectives?
- Are new residential broadband loop facilities available outside the ILEC network?
- Could a new entrant compete effectively without access to the ILECs’ new residential broadband loop facilities?
- Are practical alternatives to the ILECs’ residential advanced telecommunications loop facilities available to new entrants?

The evidence indicates a resounding affirmative response to each of these questions.

³² 47 U.S.C. § 251(d)(2).

³³ *Id.* at 736.

³⁴ *Id.* at 735, 736.

a. The proposal is totally consistent with the Act's objectives.

As the Commission is aware, the stated goal of the Act is to "provide for a pro-competitive, deregulatory national policy framework designed to accelerate rapidly private sector deployment of advanced telecommunications and information technologies and services to all Americans by opening all telecommunications markets to competition."³⁶ There are multiple goals encompassed in this broad statement. The principal goals though are to encourage competition and increase investment in advanced technology.

These principal goals -- encouraging competition and increasing investment -- can be in direct conflict. Congress recognized this reality. It thus crafted Section 251(d)(2) as a "limiting standard"³⁷ to avoid overbroad mandatory unbundling of an ILEC's network that would give rise to conflict among the Act's objectives. As Justice Breyer explained:

[T]he statute's unbundling requirements, read in light of the Act's basic purposes, require balance. Regulatory rules that go too far, expanding the definition of what must be shared beyond that which is essential to that which merely proves advantageous to a single competitor, risks costs that, in terms of the Act's objectives, may make the game not worth the candle.³⁸

There is little doubt that, with respect to new residential broadband loop facilities, the unbundling requirement has defeated the Act's objectives. As explained in Section II above, ILECs have not deployed these facilities in any significant volume since the Act's passage. So, the unbundling requirement on these ILEC facilities has neither encouraged competition nor increased investment in advanced technology as required by the Act. On the other hand, as indicated above in Section IV.1, deciding not to apply the unbundling

³⁵ *Id.* at 753 (J. Breyer, concurring).

³⁶ See Joint Statement of Managers, S. Conf. Rep. No. 104-230, 104th Cong., 2nd Sess. Preamble (1996).

³⁷ *AT&T Corp.*, 119 S.Ct. at 734.

³⁸ *Id.* at 754 (J. Breyer, concurring in part and dissenting in part).

requirement to new residential broadband loop facilities would likely encourage investment and ensure that at least one of the Act's objectives, increased investment in advanced technology, is achieved in the future.

b. The elements that constitute new residential broadband loop facilities are available to new entrants outside the ILEC network.

As already indicated above in Section II, the ILECs have not deployed new residential broadband loop facilities in any significant volume. Thus, such facilities are simply unavailable from most ILECs.

Nevertheless, new entrants can gain access to these facilities on the same terms and conditions as an ILEC can -- by simply deploying them. As indicated in all four attached Declarations, the telecommunications equipment needed to deploy new residential broadband loop facilities is readily available in the commercial market. Also, the Declarations state that this equipment can be purchased and deployed by a new entrant at the same cost as, or even a lower cost than, an ILEC. The statements in the Declarations are validated by the fact that some CLECs, RCN Corporation for example, have deployed bundled video, voice, and data services over fiber networks to several hundred thousand homes.³⁹ In fact, RCN's deployment of 304,505 homes passed in 1998 approaches that of all the ILECs combined.⁴⁰

The bottom line is that new residential broadband loop facilities are as available to new entrants as they are to ILECs. Since as a general matter these facilities do not exist in the ILEC network, CLECs have no choice but to go outside the ILEC network

³⁹ See *Fiber-Optic Highway Drives RCN's Success: Feisty Telecommunications Company Advances Miles on East and West Coasts*, Alan Breznick, February 15, 1999, available at <<http://www.rcn.com/investor/news/index.html>>.

⁴⁰ RCN's 1998 Annual Report states on page 6 that as of the fourth quarter of 1998, RCN's advanced fiber capability passed 304,505 homes. A review of public announcements by the ILECs shows that most of them have deployed substantially less than RCN. The total deployment in 1998 by the ILECs is estimated at 395,000 homes passed. BellSouth accounted for more than half of total ILEC deployment.

(i.e., deploy these facilities on their own) in order to gain access to them. But the critical point is that this is the same choice that the ILECs face. And, CLEC deployment is economically viable as demonstrated below in Section IV.4 and in the Declarations.

c. A new entrant can compete without access to ILEC new residential broadband loop facilities.

New entrants and ILECs essentially are in the same position to compete with respect to deployment of new residential broadband loop facilities. Neither class of carrier has deployed these facilities in any significant volume. Both classes of carrier can purchase the telecommunications equipment and deploy these loop facilities on the same terms and conditions as explained above in Section IV.2.b and in the Declarations. In fact, as attested to in the Declarations, CLECs may have at least one cost advantage because labor accounts for 30% to 50% of the cost of deployment and CLECs generally have lower per unit labor costs than ILECs. So the two carrier classes are able to compete in this broadband arena since ILECs do not have a clear advantage over CLECs in the deployment of new residential broadband loop facilities and in the delivery of services over those facilities.⁴¹ CLECs do not need access to these particular ILEC facilities (which for the most part have not even been deployed).

d. There are practical alternatives available to new entrants.

As already indicated in Section IV.2.b above and in the Declarations, both new entrants and ILECs can deploy new residential broadband loop facilities at cost parity. In fact, CLECs may be able to deploy such facilities more cost effectively than ILECs. This fact may explain why RCN, a leading CLEC, has been able to deploy these facilities so aggressively. Thus, CLECs have a practical alternative to using ILEC facilities under this proposal. They can deploy them. In fact, they must deploy them because they are not generally available on ILEC networks.

3. Adopting the Proposal Will Advance the Commission's Stated Goals and Policies.

Excluding new residential broadband loop facilities from mandatory unbundling as proposed above will directly advance the Commission's goals in implementing the 1996 Act. The Commission has sought to adopt policies that not only promote competition by leveling the playing field, but also encourage investment and innovation. In its August 1998 *Advanced Services Order* for example, the Commission stated that one of the fundamental goals of the 1996 Act is to "promote innovation and investment by all participants in the telecommunications marketplace, both incumbent and new entrants, in order to stimulate competition for all services, including advanced services."⁴²

To this end, the Commission asserted that it was "committed . . . to ensuring that [ILECs] make their decisions to invest in and deploy advanced telecommunications services based on the market and their business plans, rather than regulation."⁴³ In furthering this policy goal, the Commission proposed in its *Advanced Services Order* to relieve ILECs of the unbundling requirements in the provision of advanced services, provided that such services are offered through a "separate affiliate."⁴⁴ The objective of this proposal is to put ILECs and CLECs in precisely the same competitive position, thus alleviating the need for ILEC unbundling of this particular facility.

The proposal described herein builds on this concept. It deregulates ILECs only in a situation where ILECs and CLECs are precisely in the same competitive position. Neither one has an advantage.

⁴¹ It is true that, in certain instances, ILECs may have some advantage over CLECs in that they already have rights-of-way, conduits, *etc.*

⁴² Deployment of Wireline Services Offering Advanced Telecommunications Capability, *Memorandum Opinion and Order, and Notice of Proposed Rulemaking*, CC Docket No. 98-147 (released Aug. 7, 1998) ("*Advanced Services Order*"), ¶ 1.

⁴³ *Id.*, ¶ 13.

⁴⁴ *Id.* This proposal has not yet been adopted.

In its February 1999 *Section 706 Report*, the Commission reaffirmed these basic policies. In recognizing that pro-competitive policies should foster a marketplace conducive to investment and innovation, the Commission stated that it would “not hesitate to reduce the barriers to infrastructure investment . . . so that companies in all segments of the communications industry will have market-based incentives to innovate and invest in new technologies and facilities.”⁴⁵

Exempting new residential broadband loop facilities from the bundling requirement, as proposed herein, will further the Commission’s goal of creating “market-based incentives to innovate and invest in new technologies and facilities.” As shown above in Section III, requiring ILECs to provide their competitors with access to these new facilities on an unbundled basis -- at costs that regulators believe are the lowest that could be achieved by the most efficient competitor using the most efficient technology-- has led to an environment which is not conducive to investment and innovation. ILECs are deploying copper when fiber proves to be equally cost effective. This seemingly irrational investment behavior can be reversed by eliminating the unbundling rules that drive it.

Oddly enough, exempting new residential broadband loop facilities from the unbundling requirement may encourage CLECs to invest in such facilities. CLECs are probably unwilling to assume the risks of deploying those facilities if they can compel an ILEC competitor to assume those risks. Accordingly, most CLECs are currently investing in advanced telecommunications loop facilities to serve business customers, rather than residential customers. Growth of investment and expansion into residential markets can only be assured if all competitors -- ILECs and CLECs alike -- are subject to rules that allocate to each carrier the risks and rewards of its own investment.

⁴⁵ Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, *Report*, CC Docket No. 98-146, FCC 99-5 (released Feb. 2, 1999) (*Section 706 Report*), ¶ 8.

4. The Proposal Will Not Harm Competition.

As a matter of economic theory, the TIA proposal could only harm the development of competition in the deployment of new residential loop facilities if the barriers to deployment of such facilities were so high that they prohibited entry by CLECs and other possible competitors. As described above in Section IV.2.b and in all four attached Declarations, CLECs can deploy new residential broadband loop facilities under the same terms and conditions as the ILECs. This is due to the fact that such new facilities do not leverage existing legacy facilities. They involve the deployment of entirely new outside plant.

In fact, as also stated in Section IV.2.b and in the Declarations, CLECs may be able to deploy such facilities more cost effectively than ILECs. Labor accounts for 30% to 50% of the cost of deployment, and CLECs generally have lower per unit labor costs than ILECs. These facts are validated by the business plans of RCN, a leading CLEC. RCN provides voice, video, and data services over a fiber-rich network architecture to residential customers.

RCN describes this strategy in its 1998 10K report as:

Exploit[ing] the "Last Mile" Bottleneck in Existing Local Networks: Existing local networks are typically low capacity, single service facilities without the bandwidth for multiple or new services and revenue streams. Investment in the local network or "last mile" has not generally kept pace with other industry technological advances. In our target markets, we seek to be the first operator of an advanced fiber-optic network offering advanced communication services to residential customers.⁴⁶

⁴⁶ 1998 RCN 10k, p. 2. *available at* <http://www.sec.gov/archives/edgar/data/1041858/0001036050-99-000701.txt>.

RCN has delivered on its strategy. According to its 10K report, its fiber optic network currently passes 304,505 homes.⁴⁷ This compares to only 395,000 homes passed by the entire incumbent local exchange industry in the deployment of their fiber facilities.

The fact that many CLECs -- with RCN as a notable exception -- are not deploying fiber in residential applications reflects their business decision to focus on commercial customers. In the business market, CLECs are deploying a great deal of fiber loop plant.

V. CONCLUSION.

In light of the above, TIA believes that the Commission should not require ILECs to unbundle *new* residential broadband loop facilities, as defined herein. Such a policy decision is a measured approach to a very difficult problem -- ensuring that advanced broadband facilities are deployed to all Americans. TIA's proposal represents a strategy for beginning the process. We strongly recommend its adoption.

I appreciate the opportunity to bring these views to your attention.

Sincerely,



Matthew J. Flanigan
President
Telecommunications Industry Association

Attachments:
Exhibits 1-4

⁴⁷ *Id.*, p.4.

cc: Commissioner Susan Ness
Commissioner Harold Furchtgott-Roth
Commissioner Michael Powell
Commissioner Gloria Tristani
Magalie Roman Salas, Secretary
Larry Strickling, Chief, Common Carrier Bureau
Jake Jennings, Common Carrier Bureau
Claudia Fox, Common Carrier Bureau
Janice Myles, Common Carrier Bureau
ITS

EXHIBIT 1

CANNATA DECLARATION

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D. C. 20554

In the Matter of)	
)	
Implementation of the Local Competition)	CC Docket No. 96-98 Provisions of
the Telecommunications Act)	
Of 1996		

DECLARATION OF MARK CANNATA

1. My name is Mark Cannata. I am Vice President of Marketing for Marconi Communications - Access Network Systems Group. My duties include analyzing market developments for the local access portion of the telephone and cable TV networks, developing unique solutions and architectures for the delivery of broadband capability to small business and residential end-users, and developing and implementing marketing plans to promote the deployment of Marconi solutions for local access.

2. Marconi Communications is a major business group owned by GEC, a global manufacturer of intelligent electronic systems. Marconi brings together the previously separate organizations of GPT, Marconi SpA, RELTEC Corporation, and selected GEC businesses to create a company with 25,000 employees and with manufacturing and research facilities in the UK, Italy, Canada, Mexico and the United States. In addition, Marconi has ventures in China, South Africa, Russia, Japan and Malaysia. Marconi generates annual sales in excess of \$4 billion.

3. Marconi Communications' main activities on an international basis involve (a) the manufacturing, supplying and servicing of a wide range of product solutions for broadband transmission (SDH and SONET), access systems, and switching; (b) manufacturing, supplying and servicing outside plant and power systems used in fixed line and wireless base stations applications; and (c) network integration services.

4. In North America, Marconi Communications has a very strong position in the local access market. Through the recent acquisition of RELTEC Corporation, Marconi has become the leading supplier in North America of innovative fiber-in the loop solutions. Its fiber-to-the-curb (" FTTC") systems have been deployed to serve over 1 million access lines. No other manufacturer has achieved this level of actual deployment. Attachment A reflects the entire range of Marconi access solutions for fiber-to-the-business, deep fiber to the residential customer, and advanced copper to the residential customer.

5. I am submitting this declaration in order to demonstrate that, as measured on an installed first cost basis, fiber-based solutions for both narrowband and broadband applications in the local access portion of the network serving residential end-users can be deployed for new builds and total rehabs at cost parity with copper-based solutions. Moreover, fiber-based broadband solutions can deliver almost 80 times more capacity (at the low end of the transmission range) than copper-based systems for about the same cost.

6. Attachment B includes a bar chart which shows the cost of Marconi fiber deep solutions relative to the cost of a narrowband copper-based solution which incorporates copper and Digital Loop Carrier (" DLC/copper"). The study area is a new build to serve 800

homes and assumes a telephony take rate of 125%, equipage for data at 50%, and equipage for video at 100%. The architecture of the study area is reflected in Attachment C.

7. As is readily apparent, POTS can be provided over a FTTC system at 98% to 103% of the cost of a DLC/copper system. In other words, FTTC can be deployed for new builds or total rehabs for the delivery of voice to residential customers at the same cost as, or perhaps slightly less than, the cost of copper. Furthermore, the FTTC system can be easily upgraded to provide data and video by changing out the electronics. No cable upgrade would be necessary. This is not true in the case of a DLC/copper system. While the electronics are in the process of being developed to provide xDSL service from a DLC, the distance of the copper loop from the DLC to the home, the condition of the loop, and the number of copper pairs in the same binder group will determine whether highspeed data and video can be provided over the existing infrastructure.

8. With respect to broadband local access, the FTTC system in the referenced cost model can be upgraded to provide POTS plus 10/100 Base T data by incurring only a 16% incremental cost over FTTC for only POTS. Upgrading a DLC/copper system to provide xDSL service would cost 40% to 50% more than POTS over DLC/copper.

9. The FTTC system can also be further upgraded to provide POTS plus both 10/100 Base T data and VHS quality broadcast video for an incremental cost of 44%. Again, this compares favorably to the incremental cost of 40% to 50% associated with the xDSL solution.

10. In short, it is clear from this analysis that for new builds or total rehabs in a residential serving area FTTC for the delivery of POTS can be deployed for the cost of copper. And, such a FTTC system can be easily upgraded to provide 10/100 Base T data and VHS quality video for a substantially less than the cost of upgrading a DLC/copper plant to provide such robust broadband service using xDSL.

11. It should also be noted that the deployment of these FTTC systems is approximately the same for any carrier which purchases comparable volumes for deployment in new builds or total rehabs. This is due to the fact that in new builds and total rehabs, a carrier is unable to take advantage of their existing infrastructure. Hence, all carriers are in the same footing in deploying these systems under these conditions. In fact, CLECs may be at an advantage in deploying these systems because they have lower per unit costs than ILECs and labor constitutes about 50% of the cost of deployment.

12. I can also attest to the fact that these FTTC systems are commercially available today. Marconi Communications has already sold and deployed FTTC systems that are capable of serving over 1 million residential access lines.

13. I declare under the penalty of perjury that the foregoing is true and accurate.

Executed on June 15, 1999.

A handwritten signature in black ink, appearing to read "Mark Cannata", is written over a horizontal line.

Mark Cannata
Vice President for Marketing
Marconi Communications -

EXHIBIT 2

JACOBS DECLARATION

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)
)
Implementation of the Local Competition) CC Docket No. 96-98
Provisions of the Telecommunications Act)
Of 1996)

DECLARATION OF JEFFERY R. JACOBS

1. My name is Jeffery R. Jacobs. I am the Market Development Engineering Manager for Access Markets in Corning's Telecommunications Products Division. My duties include forecasting supply and demand for optical fiber and cable in the North American market, analyzing end user needs in North America, designing fiber-based broadband solutions for local access, and developing strategies for the deployment of fiber-based broadband solutions in the local access portion of the network.

2. My employer, Corning Incorporated, is a worldwide manufacturer of optical fiber, optical cable, and photonic components. Corning developed the original product and process patents for optical fiber and has received the President's Technology Medal of Honor in recognition of its contribution to fiber optic technology.

3. Currently, Corning offers a wide range of telecommunications equipment used in optical networking. This includes optical fiber, fiber optic cable, and photonic components, such as fiber gain modules used in optical amplifiers, optical components used in wave division multiplexers, optical couplers, and optical cross connects. Most recently, Corning developed a specialty class of fiber known as LEAF® - - large effective area fiber - - suited for high data rate transmission in the backbone of the Internet.

4. I am submitting this declaration in order to demonstrate that fiber-based broadband solutions for local access serving residential end-users can be designed to be less costly than copper-based broadband solutions as measured on an installed first cost basis for newly constructed or totally rehabilitated outside plant. Moreover, the fiber-based solutions are capable of delivering almost 80 times more capacity (at the low end of the transmission range) than the copper-based systems for less cost.

5. The attached bar chart (see Attachment A) reflects the relative cost and capacities of a variety of different network solutions for the delivery of broadband services to residential end-users in new build and total rehab situations. The cost model used to generate this cost data assumes aerial new builds, and is based on 35% take rate for voice, video, and data services with voice provided over twisted wire pair, video provided over coaxial cable, and data provided over a variety of different fiber-based and copper-based solutions. The area modeled is a serving area of approximately 500 homes

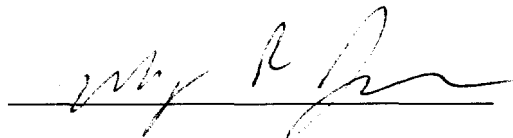
and 300 square kilometers located in Southern California. The architecture is depicted in the diagram under Attachment B.

6. The model estimates that the installed first cost for the deployment of an Ethernet fiber-to-the-home ("EFTTH") system using multi-mode fiber is 7% cheaper than ADSL and substantially more capable. The multi-mode EFTTH system costs \$1,023 per home passed compared to \$1,102 per home passed for ADSL. While the cost a single-mode fiber Ethernet system rises slightly to \$1,076 per home passed, it too beats the ADSL cost target. These Ethernet fiber systems are capable of delivering POTS, 10/100 Base T data, and VHS quality broadcast video over a drop cable which contains three different media: twisted wire pair, coaxial cable, and optical fiber. A tri-media cable is used to avoid the expense of costly customer premise equipment (i.e., digital converter) that would be necessary if the voice, data, and video were integrated onto one fiber. The carrier can eventually provide an integrated service over these Ethernet fiber systems by upgrading the electronics that drive the existing fiber. But, for initial deployment, using three different media in one cable generates significant savings.

7. It is also useful to note that the deployment cost of these Ethernet fiber systems is approximately the same for any carrier purchasing comparable volumes for deployment in new builds or complete rehabilitation of existing plant. This is due to the fact that these architectures do not take advantage of any existing legacy facilities. In fact, it is entirely possible that a new entrant could deploy these Ethernet fiber systems more cost effectively than an incumbent carrier because new entrants generally have lower per unit labor costs and labor accounts for approximately 30% of the cost of deployment. It is my understanding that competitive entrants generally have lower labor costs than incumbents because new entrants employ non-union labor while incumbent carriers pay higher union wages.

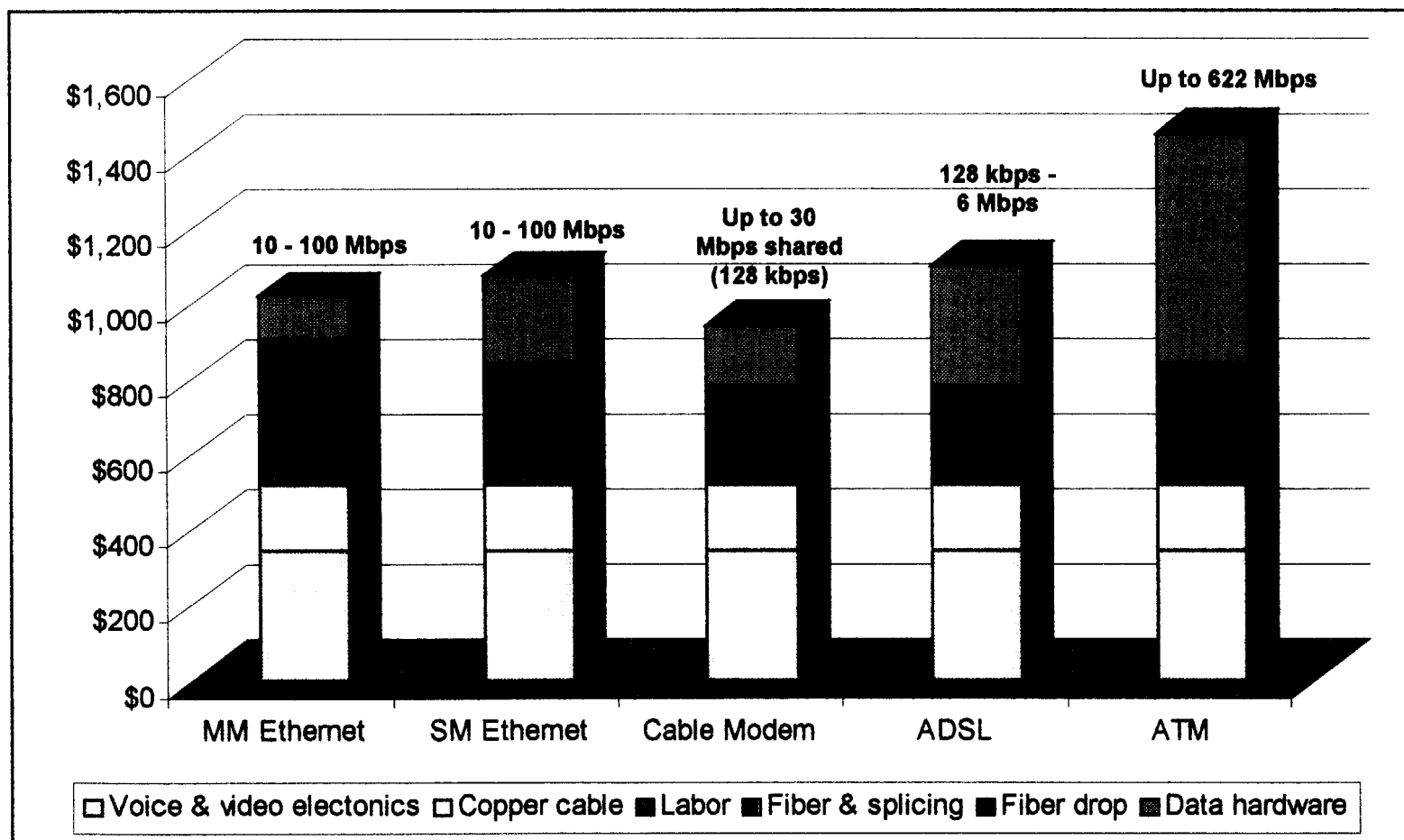
8. I can also attest to the fact that these new multi-mode and single-mode Ethernet fiber-to-the-home systems are commercially viable today. The equipment to deploy these systems is commercially available, and has been deployed in hundreds of corporate local area networks across the United States. In fact, vendors quoted the equipment costs used in the model.

9. I declare under penalty of perjury that the forgoing is true and correct.
Executed on June 13, 1999.

A handwritten signature in dark ink, appearing to read 'Jeffery J. Jacobs', is written over a horizontal line.

Jeffery J. Jacobs
Market Development Engineering Manager for
Access Markets
Telecommunications Products Division
Corning Incorporated

Cost Model Results



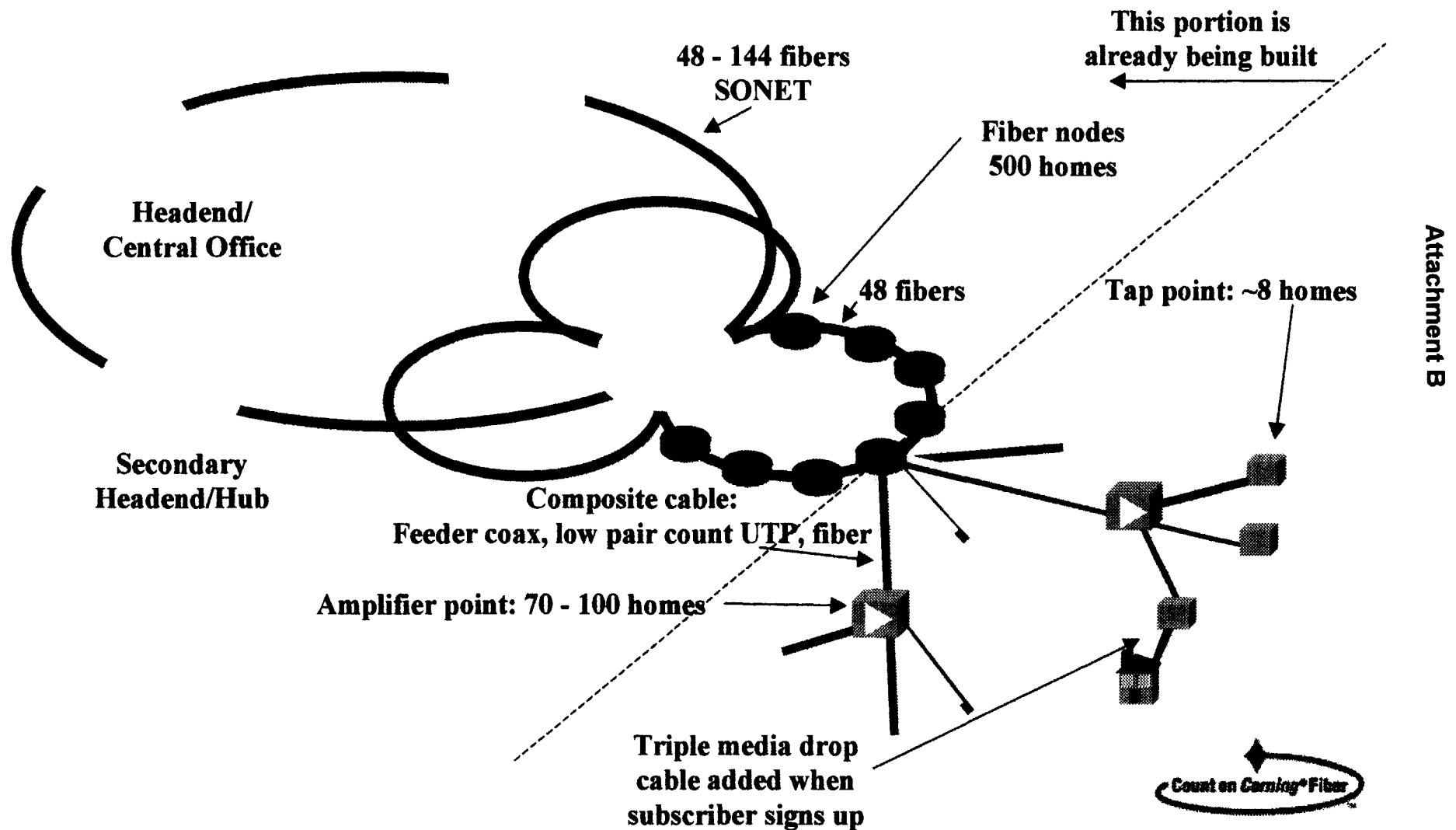
Attachment A

* For urban build, per premise passed at 35% take rate



CORNING

Overlay Architecture



TUHY DECLARATION

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)	
)	
Implementation of the Local Competition)	CC Docket No. 96-98
Provisions of the Telecommunications Act)	
Of 1996		

DECLARATION OF FRANK TUHY

1. My name is Frank Tuhy. I am the Vice President of Technology at Next Level Communications, L.L.C. ("NLC"). I am responsible for systems engineering and design requirements of proprietary local access solutions and for marketing such solutions to ILECs, CLECs, and any other entities interested in providing high-speed local access to business and residential end-users.

2. NLC was founded as a California corporation in 1994 to provide high-bandwidth video and data solutions, and backwards compatible telephony solutions to telephone companies, and was acquired by General Instrument Corporation in 1995. Subsequently, General Instrument Corporation formed a limited partnership with Spencer-Trask & Company to hold NLC assets. The Spencer affiliate is the general partner, and General Instrument is a limited partner.

3. NLC is the industry leader in developing and supplying a single access platform to address any strategic service and deployment issues facing local exchange carriers and other providers. NLC supplies the world's first fully integrated unified access platform to economically support narrowband and broadband telecommunications requirements for any network deployment. At the core of NLC's offering is the NLevel³® Switched Digital Access (SDATM) system. The NLevel³ SDA system includes fiber-to-the-curb, fiber to the cabinet/serving area, and CO-launched high speed data, switched digital video, and telephony next-generation digital loop carrier products, and customer premises equipment.

4. I am submitting this declaration to show that fiber-based narrowband solutions for local access serving residential end-users can be deployed at cost parity with copper-based solutions as measured on an installed first cost basis for newly constructed or totally rehabilitated outside plant. Moreover, NLC's fiber-to-the-curb ("FTTC") system is a platform that can provide telephony first and be readily upgraded to broadband at a later date as the demand for broadband services grows. Such an upgrade would merely require the installation of an additional circuit pack in the optical network unit and a data or video "set top box"

on the customer's premises. NLC manufactures all the electronics to efficiently accomplish this upgrade.

5. With respect to broadband, NLC's FTTC system can be deployed to provide integrated voice, data, and video for the same cost as a copper-based solution with an ADSL overlay for high-speed data.. This assumes an installed first cost comparison and a new build or total rehab deployment. NLC's FTTC system provides POTS, 10 Base T Ethernet data, and three concurrent MPEG 2 channels to provide VHS quality switched digital video.

6. Attachment A reflects all of NLC's unified architecture local Access solutions. As you can see, NLC has the capability to provide a multitude of local access solutions ranging from ADSL to FTTC. This puts NLC in a unique position to understand the various cost relationships between fiber-based and copper-based systems. We have, in fact, deployed FTTC systems to provide narrowband voice service in Somerville, Massachusetts, involving approximately 40,000 access lines. Based on this experience, we believe that FTTC for narrowband service can be deployed at cost parity with copper for voice on an installed first cost basis. NLC is also involved in U S WEST installations using copper-based VDSL systems in a fiber-to-the-cabinet/serving area configuration. It is equally clear from this experience that NLC's fiber to the cabinet/serving area full service network can be deployed for video and data at a cost that is competitive with full-service coax-based cable TV networks.

7. NLC also believes that its local access broadband solutions can be deployed at approximately the same cost for any carrier purchasing comparable volumes in new build and rehab situations. This is, of course, due to the fact that in such situations, there are no existing facilities that can be leveraged to save cost. In fact, we believe that a new entrant could deploy NLC solutions more cost effectively than incumbents because new entrants generally have lower per unit labor costs and labor accounts for approximately 50% of the cost of deployment.

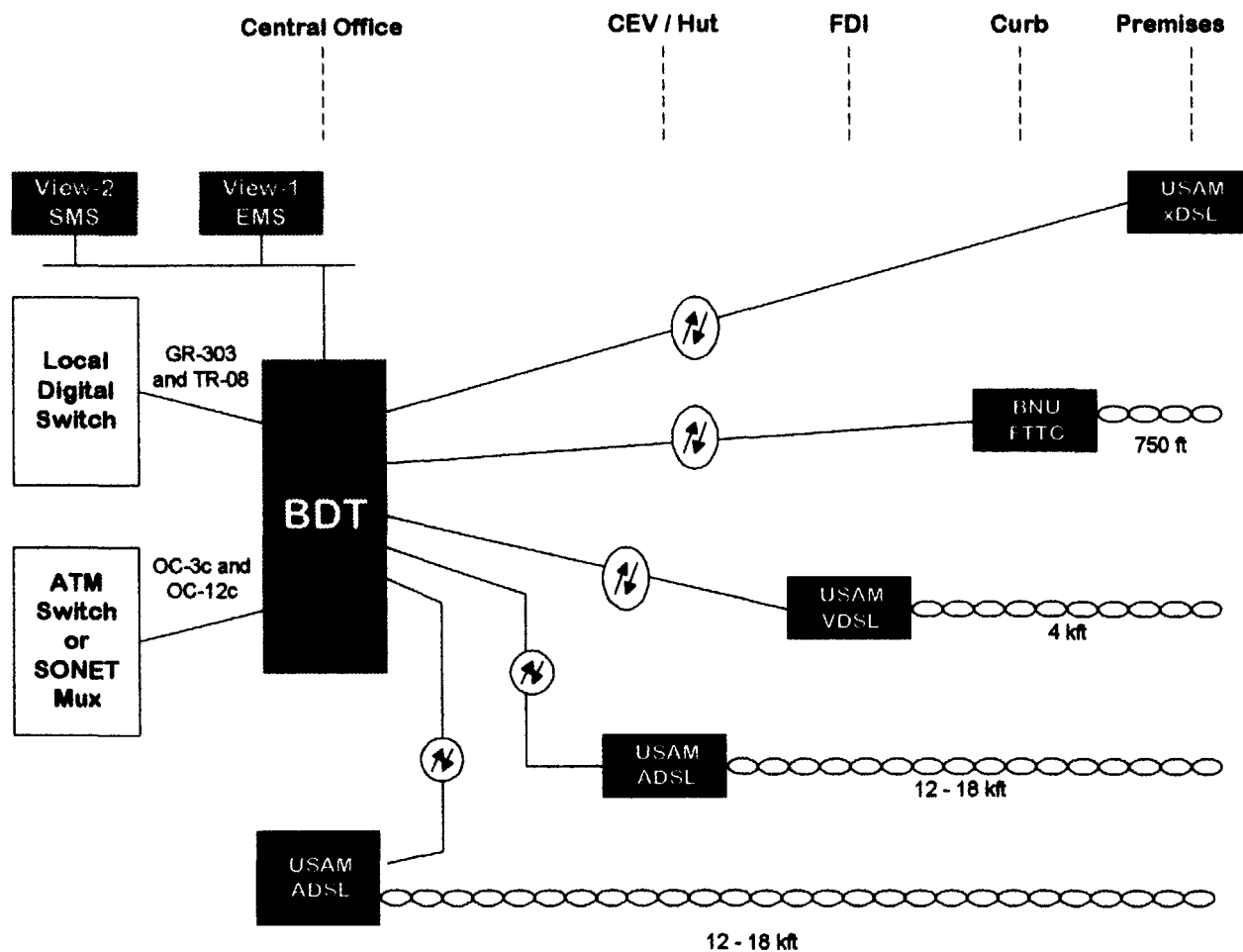
9. I can attest to the fact that the equipment to provide these narrowband and broadband solutions is commercially available today. NLC has deployed this equipment in several regions in the country. Lack of deployment of such systems is not occurring due to a lack of availability of equipment.

10. I declare under penalty of perjury that the foregoing is true and accurate. Executed on June 21, 1999.

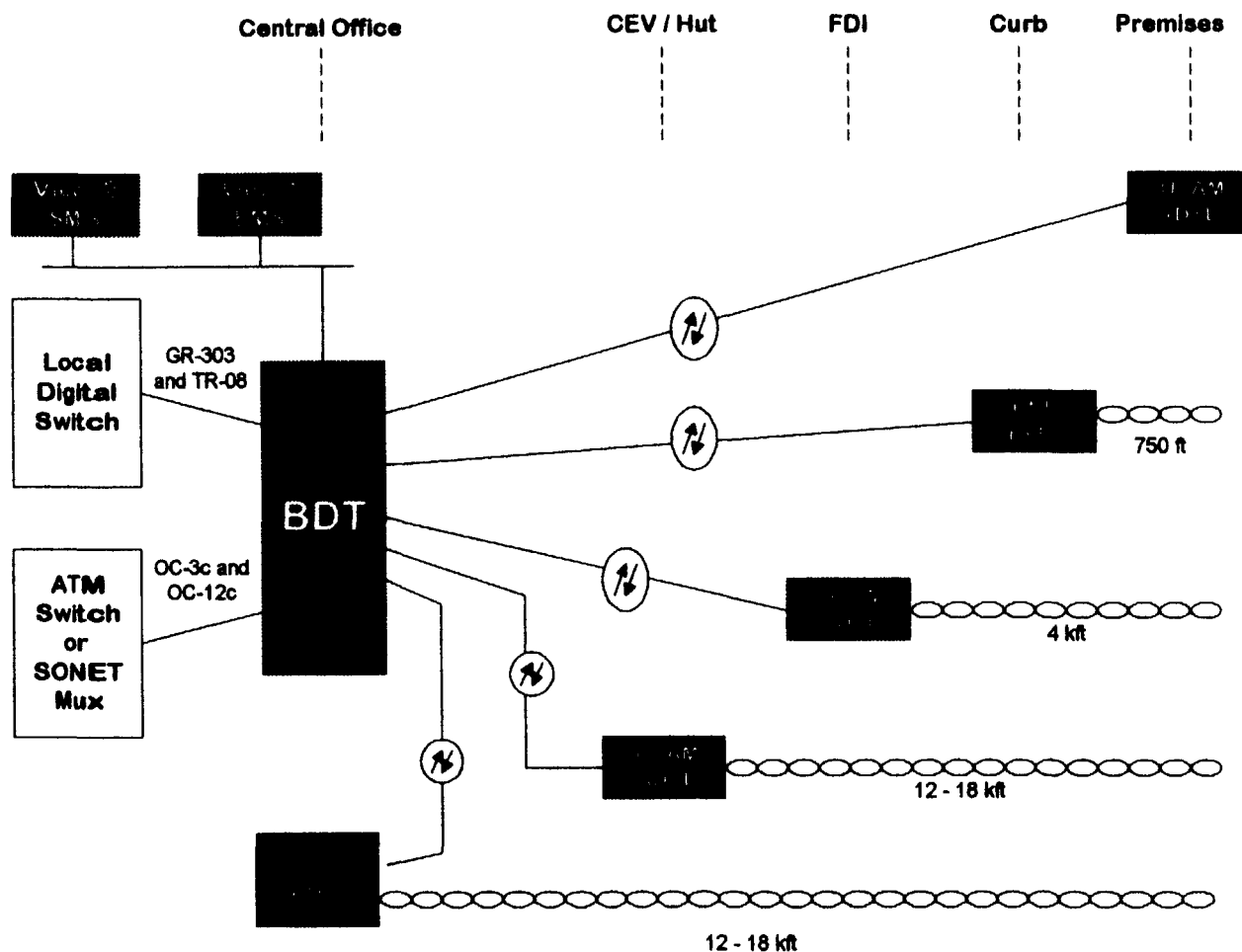


Frank Tuhy
Vice President - Technology
Next Level Communications

NLevel³ System Unified Architecture



NLevel³ System Unified Architecture



SHEFFER DECLARATION

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)	
)	
Implementation of the Local Competition)	CC Docket No. 96-98
Provisions of the Telecommunications Act)	
Of 1996		

DECLARATION OF SCOTT E. SHEFFER

1. My name is Scott E. Sheffer. I am a Senior Market Development Engineer for Corning Incorporated. My duties include forecasting the demand for and supply of fiber optics in North America, developing engineering solutions for the deployment of fiber both in the feeder and local access portions of the network, and marketing fiber applications for all regions of the network.

2. Corning Incorporated is a worldwide manufacturer of optical fiber, optical cable, and photonic components. Corning developed the original product and process patents for optical fiber and has received the President's Technology Medal of Honor in recognition of its contribution to fiber technology.

3. Corning offers a wide range of telecommunications equipment used in optical networking. This includes optical fiber, fiber optic cable, and photonic components such as fiber gain modules used in optical amplifiers, optical components used in wave division multiplexers, optical couplers, and optical cross connects. Most recently, Corning developed a specialty glass of fiber known as LEAF® - - large effective area fiber - - suited for high data rate transmission in the backbone of the Internet.

4. I am submitting this declaration to demonstrate to the Commission that fiber-based narrowband and broadband solutions for local access serving rural, residential end-users can be designed to be less costly than copper-based narrowband solutions as measured on our first installed cost basis for newly constructed or totally rehabilitated plant. These conclusions are drawn from a proprietary study commissioned by Corning in September 1997 to examine the cost implications for the deployment of fiber in rural America. The study is entitled, Rural FTTH Financial Business Case ("FBC") for Corning Inc. - - Installed First Cost ("IFC"), Operations Cost, Revenues, and Life Cycle Costs ("LCC") Analysis.

5. The study involved an examination of the first installed cost of fiber-to-the-home ("FTTH") for narrowband voice service compared to the delivery of

voice over Digital Loop Carrier ("DLC"). It also examined the first installed cost for full broadband deployment using the FTTH system.

6. The study area was characterized by a wide dispersion between homes measured at 10 homes per mile. The study assumed aerial deployment of cable and scaled deployment up from 1,000 homes in the first year to 581,000 homes in the tenth year.

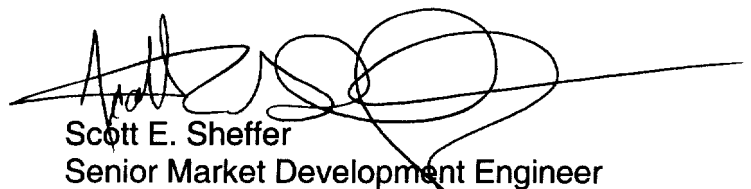
7. For the purposes of the narrowband comparative analysis, the study assumed a penetration of 1.03 lines per home in the first year rising to 1.09 lines per home in tenth year. As indicated in Attachment A, the first installed cost during the first year for narrowband FTTH (i.e., \$2,370 per home passed) was substantially less than the cost for narrowband DLC at \$2,827 per home passed.

8. What is even more surprising, is the fact that broadband FTTH beat narrowband DLC as well. Adding the electronics to provide three channels of MPEG 2 switched digital video and high-speed data (i.e., 6 Mbps downstream and 1.5 Mbps upstream) raised the first installed cost of FTTH deployment to \$2,616 per homes passed versus \$2,827 for narrowband DLC. A take rate of 20% for the video and 9% for the data was assumed in the broadband FTTH analysis.

9. It is important to note that this analysis was prepared by an independent consultant, not by Corning. The analysis was done by Bellcore (now known as Telecordia) which has well-established reputation in network design and planning.

10. Based on the analysis, the cost of deployment is the same for any carrier purchasing comparable volumes. The study assumed a decline in the cost of the equipment over time for all carriers because of the experience curve effect associated with the doubling of production volume. Bellcore reports in the study that the equipment to provide narrowband FTTH and broadband FTTH is commercially available

11. I declare under the penalty of perjury that the foregoing is true and correct. Executed on June 18, 1999.



Scott E. Sheffer
Senior Market Development Engineer

Attachment A

CONFIDENTIAL - RESTRICTED ACCESS

Rural FTTH FBC for Corning Inc.
DRAFT REPORT 1.1

Consulting Report
September 1997

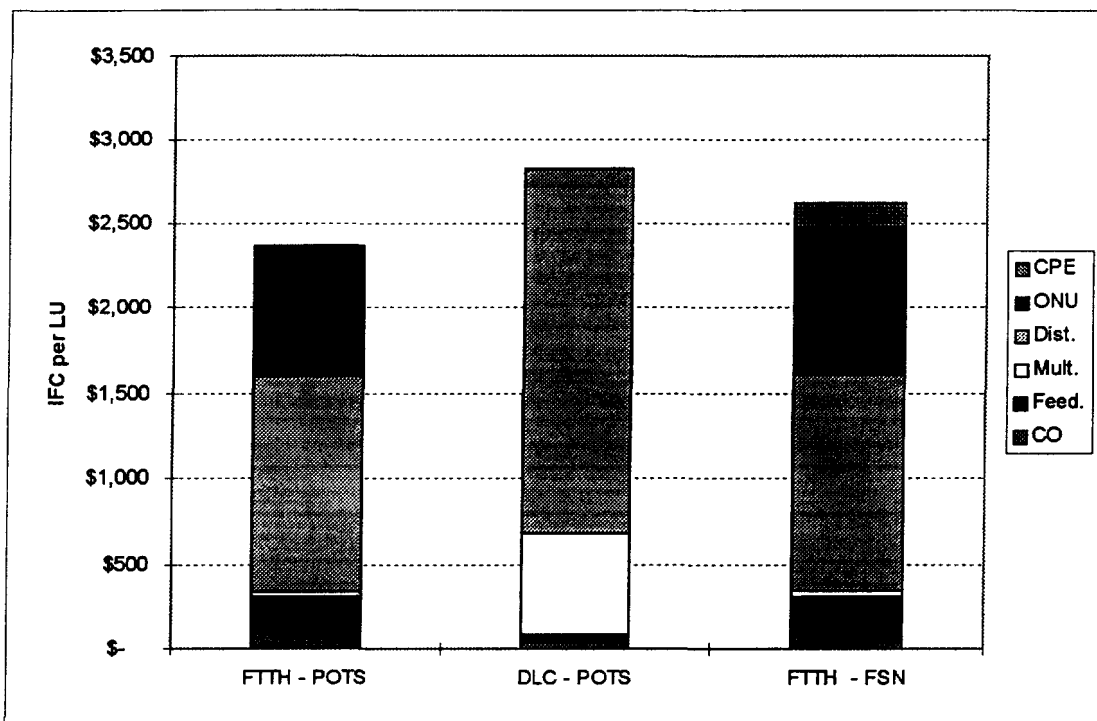


Figure 5.3.1: The cumulative IFC per LU for the FTTH-POTS only system, the DLC-POTS only system, and the full service FTTH system in the initial year. This assumes an aerial rebuild, and the 1000 homes passed. The assumed penetrations are 1.03 POTS lines / LU, 20% dig. video, and 9% Internet.

	FTTH - POTS	DLC - POTS	FTTH - FSN
CPE	-	-	\$140
ONU	\$772	-	\$872
Distribution	\$1,263	\$2,140	\$1,263
Multiplexer	\$30	\$601	\$30
Feeder	\$67	\$48	\$67
Central Office	\$238	\$38	\$244

Table 5.3.1: Breakdown of Figure 5.3.1